

September 16, 2009

Mr. David E. Tuttle
Manager, Quality Assurance
Anderson Greenwood Crosby Corporation
43 Kendrick Street
Wrentham, MA 02093-1544

SUBJECT: NRC INSPECTION REPORT NO. 99900293/2009-201, NOTICE OF VIOLATION, AND NOTICE OF NONCONFORMANCES

Dear Mr. Tuttle:

During the period of July 13–17, 2009, the U.S. Nuclear Regulatory Commission (NRC) conducted an inspection at the Anderson Greenwood Crosby facility in Wrentham, MA (hereafter referred to as AGC). The enclosed report presents the results of this inspection.

The NRC inspection team performed a limited scope inspection to assess AGC compliance with the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Part 21, “Reporting of Defects and Noncompliance,” and selected portions of Appendix B, “Quality Assurance Program Criteria for Nuclear Power Plants and Fuel Reprocessing Plants,” to 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities.” This inspection report does not constitute NRC endorsement of your overall quality assurance (QA) or 10 CFR Part 21 programs.

Based on the results of this inspection, the NRC inspection team identified a Severity Level IV violation of NRC requirements. The NRC evaluated this violation in accordance with the agency’s current Enforcement Policy, which is available on the NRC’s Web site at http://www.nrc.gov/about_nrc/regulatory/enforcement/enforce_pol.html. In addition, the NRC inspection team found that the implementation of AGC’s QA program failed to conform to certain NRC requirements imposed on AGC by its customers. Specifically, the NRC inspection team determined that AGC was not implementing its design control, document control, test control, control of measuring and test equipment, and corrective action programs consistent with regulatory requirements or the AGC QA manual.

Enclosed you will find a notice of violation and a notice of nonconformances, which cites three instances of nonconformance. These notices also reference the applicable requirements of Appendix B to 10 CFR Part 50. The enclosed inspection report discusses the circumstances surrounding the findings.

You are required to respond to this letter and should follow the instructions specified in the enclosed notice of violation and notice of nonconformances when preparing your response. The NRC will use your response, in part, to determine whether further enforcement action is necessary to ensure compliance with regulatory requirements. In addition, AGC should determine the overall impact of corrective actions associated with NON 99900293/2009-201-02 on supplied components and assess whether further communication with the affected customer(s) is necessary.

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make a copy of this letter, its enclosures, and the AGC response available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

To the extent possible, your response should not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a copy of your response that identifies the information that should be protected in brackets and a redacted copy of your response that deletes such information. If you request that such material be withheld from public disclosure, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim (e.g., you should explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Sincerely,
/RA/

Juan Peralta, Chief
Quality and Vendor Branch 1
Division of Construction Inspection
& Operational Programs
Office of New Reactors

Docket No. 99900293

Enclosures:

1. Notice of Violation
2. Notice of Nonconformances
3. Inspection Report No. 99900293/2009-201

In accordance with 10 CFR 2.390, "Public Inspections, Exemptions, Requests for Withholding," of the NRC's "Rules of Practice," the NRC will make a copy of this letter, its enclosures, and the AGC response available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>.

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Sincerely,
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Juan Peralta, Chief
Quality and Vendor Branch 1
Division of Construction Inspection
& Operational Programs
Office of New Reactors

Docket No. 99900293

Enclosures:

1. Notice of Violation
2. Notices of Nonconformance
3. Inspection Report No. 99900293/2009-201

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NAME	GGalletti	RPascarelli	JPeralta	
DATE	8/25/2009	09/15/2009	9/16/2009	

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NOTICE OF VIOLATION

Anderson Greenwood Crosby
Wrentham, MA. 02093-1544

Docket Number 99900293
Inspection Report Number 2009-201

During a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Anderson Greenwood Crosby (AGC) facility in Wrentham, Massachusetts from July 13-17, 2009 a violation of NRC requirements was identified. In accordance with the NRC Enforcement Policy, the violation is listed below:

As required, in part, by 10 CFR 21.21(a), each individual, corporation, partnership, dedicating entity, or other entity must adopt appropriate procedures to evaluate deviations and failures to comply to identify defects and failures to comply associated with substantial safety hazards as soon as practicable. In addition, 10 CFR 21.21(b) states that, "If the deviation or failure to comply is discovered by a supplier of basic components, or services associated with basic components, and the supplier determines that it does not have the capability to perform the evaluation to determine if a defect exists, then the supplier must inform the purchasers or affected licensees within five working days of this determination so that the purchasers or affected licensees may evaluate the deviation or failure to comply, pursuant to § 21.21(a)."

Section XV of the AGC Quality Assurance Manual, (QC-110), Revision 37, dated December 8, 2008, states, in part, that whenever a nonconformance which could result in a substantial safety hazard is identified, it shall be processed in accordance with procedures outlined in the AGC Department Operating Instruction (DOI QA-48-3016).

Contrary to the above, as of July 17, 2009, DOI QA-48-3016 did not provide adequate procedural guidance to evaluate deviations and failures to comply associated with substantial safety hazards. More specifically, DOI QA-48-3016 did not contain instructions to:

- (1) Ensure all formal methods for identifying and documenting deviations are evaluated within the AGC Part 21 evaluation process,
- (2) Ensure that the extent of condition is identified and evaluated when a deviation is identified,
- (3) Inform purchasers or affected licensees within five working days if AGC determines that it does not have the capability to perform the evaluation to determine if a defect exists.

This issue has been identified as Violation 99900293/2009-201-01.

This is a Severity Level IV Violation (Supplement VII).

Pursuant to the provisions of 10 CFR 2.201, "Notice of Violation," AGC is hereby required to submit a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Chief, Quality and Vendor Branch 1, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this Notice of Violations. This reply should be clearly marked as a "Reply to a Notice of Violation" and should include for each violation (1) the reason for the violation, or, if contested, the basis for disputing the violation or severity level, (2) the corrective steps that have been taken and the results achieved, (3) the corrective steps that will be taken to avoid further violations, and (4) the date when full compliance will be achieved. Your response may reference or include previous docketed

correspondence, if the correspondence adequately addresses the required response. Where good cause is shown, the NRC will consider extending the response time.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, accessible at <http://www.nrc.gov/reading-rm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21, "Requirements for the Protection of Safeguards Information."

Dated this 16th day of September 2009.

NOTICE OF NONCONFORMANCES

Anderson Greenwood Crosby Corporation
Wrentham, MA 02093-1544

Docket No. 99900293
Inspection Report No. 2009-201

Based on the results of a U.S. Nuclear Regulatory Commission (NRC) inspection conducted at the Anderson Greenwood Crosby (AGC) facility in Wrentham, Massachusetts, from July 13–17, 2009, the NRC inspection team found that certain activities were not conducted in accordance with the following NRC requirements which were contractually imposed on AGC by NRC licensees, as summarized below:

- A. Criterion III, "Design Control," of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Domestic Licensing of Production and Utilization Facilities," states, in part, that (1) measures must be established to ensure that applicable regulatory requirements and the design basis for components are correctly translated into specifications, drawings, procedures, and instructions and (2) design control measures must provide for verifying or checking the adequacy of design, such as through the performance of design reviews.

Section 50.55a, "Codes and Standard," paragraph (b)(4) "Design, Fabrication, and Materials Code Cases," to 10 CFR Part 50, states, in part, that code cases listed in NRC Regulatory Guide (RG) 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III," Revision 34, may be applied without prior NRC approval subject to the conditions specified in RG 1.84.

Section 3.3.1.2 of the AGC Quality Assurance Manual, (QC-110), Revision 37, dated December 8, 2008, requires that an applications engineer prepare a design checklist which defines the design requirements of the ASME Code, design specification, and customer order. The design checklist must document the design review of the applicable design inputs, such as design specifications, performance requirements, and codes and standards. An applications engineer must sign off on the design checklist during design reviews for each requirement that has been reviewed. When all action items have been completed, the nuclear applications engineering manager must approve the design checklist.

Section 3.3.2.2 of QC-110 requires that the design analysis documentation define the design inputs and their sources, provide results of literature searches or other applicable background data, and identify assumptions and indicate those that must be verified as the design proceeds.

Contrary to the above, AGC failed to implement its procedures for design control as required. More specifically:

- Records for safety valves in Purchase Order 45606428 provided no evidence that AGC had evaluated the conditions in RG 1.84 for ASME Code Case N-100, "Pressure Relief Valve Design Rules, Section III, Division 1, Class 1, 2, and 3," in accordance with Section 3.3.1.2 of QC-110.

- Records for relief valves in Purchase Orders QP081141 and 1023530 provided no evidence that the applications engineer had completed the design checklist in accordance with Section 3.3.2.2 of QC-110.
- Records for relief valves in Purchase Order QP081141 provided no evidence that the calculation for determining the relieving capacity of the relief valves was documented, approved, or reviewed in accordance with Section 3.3.2.2 of QC-110.

These issues are identified as Nonconformance 99900293/2009-201-02.

- B. Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50 states, in part, that measures shall be established to ensure that tools, gauges, instruments, and other measuring and testing devices used in activities affecting quality are properly controlled, calibrated, and adjusted at specified periods to maintain accuracy within necessary limits.

Section 12 of QC-110 states, in part, that (1) primary standards shall be recalibrated yearly, and (2) measuring equipment shall have its calibration accuracy verified immediately after receiving inspection of finished items, wall thickness inspections and final inspections, and that verification of calibration accuracy shall be documented.

Inspection Instruction No. Q-519, "Tool and Gage Calibration," Revision 61, dated September 28, 2008, states, in part, that (1) primary standards shall be recalibrated yearly, and (2) that a daily check of the temperature and humidity in the calibration area be performed and documented.

Contrary to the above, AGC failed to implement its procedures for control of measuring and test equipment as required. Specifically:

- A set of gage blocks (INSP110F) used as a primary standard was last calibrated on July 7, 2008, and was not re-calibrated within the annual requirement. The gage blocks were, therefore, out of calibration at the time of the NRC inspection.
- The final dimensional inspections on each of two valves (SRVs N56898-00-0109 and N99930-00-0003) were performed prior to the hydrostatic and functional testing of each valve. However, the post-calibration checks of the inspection gages used to inspect each valve were not documented as required by QC-110.
- The temperature and humidity in the calibration area had not been documented since July 6, 2009, as required by QC-110 and Inspection Instruction No. Q-519.

These issues are identified as Nonconformance 99900293/2009-201-03.

- C. Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50, states that measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and nonconformances are promptly identified and corrected

Section 16 of QC-110 states, in part, that a period of 30 days is provided for the review and evaluation of a corrective action report (CAR) with follow up actions after this period of time of up to 90 days when the General Manager is notified and adequate actions are required to be taken.

Contrary to the above, AGC failed to implement its corrective action program as required. More specifically:

- QC-110 did not provide a mechanism to ensure that conditions adverse to quality which are identified by AGC's customers are systematically reviewed, documented, and addressed. Specifically, the NRC inspection team determined, through discussions with AGC staff members that components which were returned to AGC due to nonconforming specifications or other quality-related issues, were not consistently directed to the CAR manager for review and evaluation and no documentation that specifically identified customer-related issues was identified during the inspection.
- CAR I-317, dated August 18, 2007, did not identify or document any corrective action taken, actions to prevent recurrence, a proposed completion date, or follow up actions to be taken as required by QC-110. Additionally, the NRC inspector noted that follow-up actions described in CAR N-342, dated August 8, 2008, were not completed in the prescribed timeframe as specified in QC-110.

These issues are identified as examples of Nonconformance 99900293/2009-201-04.

Please provide a written statement or explanation to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Chief, Quality and Vendor Branch 1, Division of Construction Inspection and Operational Programs, Office of New Reactors, within 30 days of the date of the letter transmitting this Notice of Nonconformances. This reply should be clearly marked as a "Reply to a Notice of Nonconformance" and should include for each noncompliance: (1) the reason for the noncompliance, or if contested, the basis for disputing the noncompliance; (2) the corrective steps that have been taken and the results achieved; (3) the corrective steps that will be taken to avoid noncompliance; and (4) the date when your corrective action will be completed. Where good cause is shown, the NRC will consider extending the response time.

Because your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's Agencywide Documents Access and Management System, which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>, to the extent possible, it should not include any personal privacy, proprietary, or Safeguards Information so that it can be made available to the public without redaction. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request that such material be withheld, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If Safeguards Information is necessary to provide an acceptable response, please provide the level of protection described

in 10 CFR 73.21, "Protection of Safeguards Information: Performance Requirements."

Dated this 16th day of September 2009

**U.S. NUCLEAR REGULATORY COMMISSION
OFFICE OF NEW REACTORS
DIVISION OF CONSTRUCTION INSPECTION AND OPERATIONAL PROGRAMS
VENDOR INSPECTION REPORT**

Docket No.: 99900293

Report No.: 99900293/2009-201

Vendor: Anderson Greenwood Crosby Corporation
43 Kendrick Street
Wrentham, MA 02093-1544

Vendor Contact: Mr. David Tuttle
Quality Assurance Manager
(508) 384-3121
E-mail: dtuttle@tycovalves.com

Nuclear Industry: Anderson Greenwood Crosby is a supplier of safety-related and commercial-grade valves and services to nuclear utilities, the U.S. Navy, and power plant equipment manufacturers throughout the world.

Inspection Dates: July 13–17, 2009

Inspectors: Greg Galletti NRO/DCIP/CQVP, Team Leader
Yanely Malave NRO/DCIP/CQVP
Andy du Bouchet NRO/DCIP/CQVP
Robert Prato NRO/DCIP/CQVP
Stephen Tingen NRR/ADES/DCI/CPT

Approved by: Juan Peralta, Chief
Quality and Vendor Branch 1
Division of Construction Inspection
& Operational Programs
Office of New Reactors

EXECUTIVE SUMMARY

Anderson Greenwood Crosby
99900293/2009-201

The purpose of this inspection was to verify that Anderson Greenwood Crosby (AGC) implemented an adequate quality assurance (QA) program that complied with the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to Title 10 of the *Code of Federal Regulations (10 CFR) Part 50*, "Domestic Licensing of Production and Utilization Facilities." The inspection also verified that AGC implemented a program under 10 CFR Part 21, "Reporting of Defects and Noncompliance" (hereafter referred to as 10 CFR Part 21), that met the regulatory requirements of the U.S. Nuclear Regulatory Commission (NRC). The inspection was conducted at the AGC facility in Wrentham, Massachusetts, during the period July 13–17, 2009.

The following served as the bases for the NRC inspection:

- Appendix B to 10 CFR Part 50
- 10 CFR Part 21

The NRC inspection team implemented Inspection Procedure (IP) 43002, "Routine Inspections of Nuclear Vendors," and IP 36100, "Inspection of 10 CFR Part 21 and 50.55(e) Programs for Reporting Defects and Nonconformance," during the conduct of this inspection.

The NRC has not previously performed an inspection at the AGC facility in Wrentham, MA. The results of the inspection are summarized below.

With the exception of the one violation and three nonconformances described below, the NRC inspection team concluded that the AGC QA policies and procedures complied with the applicable requirements of 10 CFR Part 21 and Appendix B to 10 CFR Part 50. The NRC inspection team further concluded that AGC personnel were implementing these policies and procedures effectively.

10 CFR Part 21

The NRC inspection team identified a violation involving multiple examples of AGC's failure to meet the requirements of 10 CFR Part 21. The specifics of the violations are documented in the Notice of Violations and are described below in the body of this report. The NRC cited the violations because AGC did not provide adequate procedural guidance to evaluate deviations and failures associated with substantial safety hazards.

Training and Qualification of Personnel

The NRC inspection team concluded that the training and qualification of AGC personnel conform to the regulatory requirements of Criterion II, "Quality Assurance Program," of Appendix B to 10 CFR Part 50. In addition, the NRC inspection team concluded that the AGC Quality Assurance Manual and associated training and qualification procedures were effectively implemented. The NRC inspection team identified no findings of significance.

Design Control

The NRC inspection team identified one nonconformance associated with multiple examples of AGC's failure to meet the requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. The specifics of this nonconformance are documented within the Notice of Nonconformances and are described below in the body of this report. The nonconformance involves AGC's failure to implement its procedures for design control as required. With the exception of the issues identified in Nonconformance 99900239/2009-201-02, the NRC inspection team concluded that the AGC Design Control Program conforms to the regulatory requirements and has been implemented in accordance with applicable AGC procedures.

Procurement Document Control

The NRC inspection team concluded that AGC controls for the procurement of materials, equipment, and services conform to the regulatory requirements of Criterion IV, "Procurement Document Control," of Appendix B to 10 CFR Part 50. The NRC inspection team also concluded that the AGC staff effectively implemented the AGC Quality Assurance Manual and associated procurement procedures. The NRC inspection team identified no findings of significance.

Document Control

The NRC inspection team concluded that AGC controls for the procurement of materials, equipment, and services conform to the regulatory requirements of Criterion VI, "Document Control," of Appendix B to 10 CFR Part 50; and that the AGC QA Manual and associated procurement procedures were effectively implemented. No findings of significance were identified.

Control of Purchased Material, Equipment, and Services and Audits

The NRC inspection team concluded that the external and internal audits performed by AGC conform to the regulatory requirements of Criterion VII, "Control of Purchased Material, Equipment, and Services," and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team also concluded that AGC staff effectively implemented the AGC Quality Assurance Manual and associated procurement procedures. The NRC inspection team identified no findings of significance.

Inspection

The NRC inspection team concluded that inspection activities affecting quality performed by AGC conform to the regulatory requirements of Criterion X, "Inspections," of Appendix B to 10 CFR Part 50. The NRC inspection team further concluded that the AGC staff effectively implemented the AGC Quality Assurance Manual and associated procedures. The NRC inspection team identified no findings of significance.

Test Control

The NRC inspection team concluded that AGC controls for the procurement of materials, equipment, and services conform to the regulatory requirements of Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50; and that the AGC QA Manual and associated procurement procedures were effectively implemented. No findings of significance were identified.

Control of Measuring and Test Equipment

The NRC inspection team identified one nonconformance with multiple examples of AGC's failure to meet the requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50. The specific examples of the nonconformance are documented within this inspection report in the Notice of Nonconformance and are described below in the body of this report. The nonconformance documents AGC's failure to implement its procedure to perform yearly calibration of primary standards and to control temperature and humidity in the calibration area. With the exception of the issues identified in Nonconformance 99900239/2009-201-03, the NRC inspection team concluded that the AGC Control of Measuring and Test Equipment Program conforms to regulatory requirements and have been implemented in accordance with applicable AGC procedures.

Nonconforming Materials, Parts, or Components

The NRC inspection team concluded that AGC's controls on materials, parts, and components conform to the regulatory requirements of Criterion XV, "Nonconforming Materials, Parts, or Components," of Appendix B to 10 CFR Part 50. The NRC inspection team concluded further that the AGC staff effectively implemented the AGC Quality Assurance Manual and associated procurement procedures. The NRC inspection team identified no findings of significance.

Corrective Action

The NRC inspection team identified two examples of nonconformance relating to AGC's failure to meet the requirements of Criterion XVI, "Corrective Actions," of Appendix B to 10 CFR Part 50. The specific examples of the nonconformance are documented within the Notice of Nonconformances and are described below in the body of this report. These nonconformances are associated with AGC's failure to provide adequate procedural guidance and to implement its corrective action procedures as required. With the exception of the issues identified in Nonconformances 99900239/2009-201-04, the NRC inspection team concluded that the AGC Corrective Action Program conforms to regulatory requirements and has been implemented in accordance with applicable AGC procedures.

REPORT DETAILS

1. 10 CFR Part 21 Program

a. Inspection Scope

The NRC inspection team reviewed the policies and implementing procedures of AGC that govern the program to verify compliance with the requirements 10 CFR Part 21. In addition, the NRC inspection team evaluated a sample of AGC's purchase orders (POs) for compliance with the requirements of 10 CFR 21.31, "Procurement Documents," and verified the vendor's implementation of the posting requirements in accordance with 10 CFR 21.6, "Posting Requirements." Specifically, the NRC inspection team reviewed the following AGC policies and procedures:

- AGC Quality Assurance Manual (QC-110), Section XV, "Nonconforming Source Materials or Items," Revision 37, dated December 8, 2008
- Department Operating Instruction (DOI) QA-48-3016, "Reporting of Defects and Noncompliance," Revision 9, dated February 6, 2008
- DOI QA-48-3039, "Control of Nonconforming Product," Revision 5, dated May 26, 2004
- DOI QA-48-3047, "Nonconformance Analysis," Revision 2, dated July 2, 2004
- DOI QA-48-3051, "Complaint Report," Revision 0, dated May 10, 2002
- DOI QA-48-3052, "Preventive Action," Revision 0, dated July 16, 2003

b. Observations and Findings

b.1 Postings

The NRC inspection team evaluated AGC's compliance with the posting requirements of 10 CFR 21.6. The NRC inspection team found that AGC had posted a notice that included, in part, a copy of Section 206 of the Energy Reorganization Act of 1974; a copy of the table of contents for 10 CFR Part 21; a copy of 10 CFR 21.1, "Purpose," and a notice which included the name and telephone number of AGC's 10 CFR Part 21 contact, the AGC quality assurance (QA) manager. However, the NRC inspector noted that the AGC posting did not provide a reference to the vendor's DOI-QA-48-3016, nor was there a description of where the procedure could be examined as required by 10 CFR Part 21.6. These omissions were discussed with the vendor during the NRC inspection and because of the resulting minimal impact on safety of these omissions; they are characterized in this inspection report as examples of a minor violation of the posting requirements.

b.2 10 CFR Part 21 Procedure

QC-110, Section XV, "Nonconforming Source Materials or Items," Item 15.3.8, "Reporting of Defects and Noncompliance (10CFR21)," states, in part, that whenever a nonconformance occurs which could result in a substantial safety hazard as defined within the AGC 10 CFR Part 21 process, the nonconformance must be processed in accordance with the

applicable AGC DOI. DOI QA-48-3016 outlines the procedure and responsibilities to identify, control, document, and resolve conditions used for reporting of defects and noncompliance discovered at the AGC facility. During the review of the procedure, the NRC inspection team determined that DOI QA-48-3016 did not contain sufficient guidance to ensure adequate implementation of 10 CFR Part 21 requirements. More specifically, the NRC inspection team identified the following procedural deficiencies:

- AGC did not identify formal methods to ensure that the QA manager was notified of potential deviations in materials, parts, or items purchased or manufactured by AGC. Various methods exist to document potential nonconformances during purchasing and manufacturing activities, such as the use of Forms QC-611, "Supplier," and QC-45A-1D, "Material Rejection Notice." These forms are not formally a part of the AGC 10 CFR Part 21 evaluation process; therefore, some potential deviations, including customer complaints or returns, are not directed consistently to the QA manager for evaluation.
- When a potential deviation is identified, the DOI QA-48-3016 requires that the part or item associated with the potential deviation shall be evaluated but the procedure does not explicitly require that the evaluation consider the extent of the condition to identify other parts or components which may also be affected.
- DOI QA-48-3016 does not provide instructions to notify the customer with five days of a determination that AGC is not capable of performing an evaluation of the potential deviation to determine if a substantial safety hazard exists.

The NRC inspection team identified these procedural deficiencies as Violation 99900293/2009-201-01.

b.3 10 CFR Part 21 Implementation

The NRC inspection team requested copies of the records pertaining to all 10 CFR Part 21 evaluations that AGC had completed. The inspectors discovered that AGC management had performed only one potential 10 CFR Part 21 evaluation as a result of an identified deviation. The evaluation determined that the issue, a product assessment/evaluation inconsistent with AGC procedures, did present a substantial safety hazard and, as a result, AGC issued a 10 CFR Part 21 report dated September 15, 2006. The NRC inspection team verified that the report contained the required information consistent with the reporting requirements described in 10 CFR 21.21, "Notification of Failure To Comply or Existence of a Defect and Its Evaluation."

The NRC inspection team also sampled a selection of recent corrective action reports (CARs) and nonconformance reports (NMRs) to verify that AGC had adequately evaluated the issues identified through these reporting systems for potential 10 CFR Part 21 applicability. The NRC inspection team determined that, although a structured process for evaluating NMRs for 10 CFR Part 21 applicability existed, AGC's QA program did not contain a structured process for evaluating CARs for 10 CFR Part 21 applicability. Section 10, "Corrective Actions," of this inspection report describes this issue further.

b.4 Purchase Orders

Section 4.3.2.3.3 of QC-110 requires POs to list the requirements of 10 CFR Part 21, as appropriate. QC-110 states, in part, that the PO must require that the supplier report

nonconformances which deviate from PO requirements to the AGC QA staff for disposition. In addition, the PO must impose the provisions of 10 CFR Part 21 on the suppliers of source material, items, or services, as applicable. AGC imposes the requirements of 10 CFR Part 21 on its qualified suppliers who have programs meeting the requirements of Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants," to 10 CFR Part 50, "Domestic Licensing of Process and Utilization Facilities," by incorporating supplier quality requirements into all POs for nuclear safety-related materials, items, and services. The AGC procurement process requires that any item which deviates from PO requirements be reported to AGC in writing on Deviation Report Form QC-611 for disposition before shipment.

The NRC inspection team reviewed a sample of AGC POs and verified that AGC had implemented its 10 CFR Part 21 program in a manner consistent with the requirements described in 10 CFR 21.31, "Procurement Documents," for basic components. The NRC inspection team reviewed the follow POs:

- A02652: Stainless Foundry—Bonnet Casting PV Code III Nuclear
- A03582: Draco Spring—Spring Class I
- A03334: Energy Steel & Supply Co.—2.5" Double-Ended Stud
- A03583: Suhm Coil Spring Works—Spring Section III Nuclear
- A04083: Stainless Foundry—Bonnet Casting PV Code III Nuclear

On the basis of this review, the NRC inspection team verified that, as appropriate, AGC specifies within their purchase orders when the provisions of 10 CFR Part 21 apply. The NRC inspection team identified no findings of any significance.

c. Conclusions

The NRC inspection team concluded that, with the exception of the violation identified in the Notice of Violation 99900293/2009-201-01, the AGC staff was effectively implementing a program for reporting defects and nonconformances consistent with the regulatory requirements of 10 CFR Part 21.

2. Training

a. Inspection Scope

The NRC inspection team reviewed AGC policies and procedures to verify that AGC was implementing training activities in a manner consistent with regulatory requirements and industry standards.

Section 0.1, "Introduction," of QC-110 documents AGC's commitments under Appendix B to 10 CFR Part 50 and American National Standards Institute/American Society of Mechanical Engineers (ANSI/ASME) N45.2-1977, "Quality Assurance Program Requirements for Nuclear Facilities." Section 2.3.6, "Training," of Section II, "Quality Assurance Program," of QC-110 documents the basic procedural guidelines for AGC's training program, including training requirements for inspection and test personnel. Section 2.4.1, "Inspection Personnel," of QC-110, states that "inspection personnel for visual, dimensional, witnessing of test (assembly inspections) shall be qualified and certified by the Quality Assurance Manager in accordance with the Training Program TP-5900 (Qualification and Certification Program for Inspection Personnel)." In addition, Section 2.4.2, "Test Personnel," of QC-110 states that "testing

personnel for valve assembly and valve testing shall be qualified and certified by the Quality Assurance Manager in accordance with the Training Program TP-5901 (Training, Qualification and Certification Program for Nuclear Test Personnel).”

Sections 2.4.1.2 and 2.4.2.2, both entitled, “Maintenance of Certification,” of QC-110 requires the QA manager to confirm that each AGC qualified inspector and tester has worked in each qualified area at least annually. Sections 2.4.1.3 and 2.4.2.3, both entitled, “Recertification,” of QC-110 require the QA manager to recertify each inspector and tester at least every 3 years by a redetermination of each inspector’s initial capability or by evidence of continued satisfactory performance.

The NRC inspection team reviewed the following AGC lower tier training procedures for conformance to the training requirements in QC-110:

- Training Program TP-5900, Revision 4, “Qualification and Certification Program for Inspection Personnel,” dated February 8, 1994
- Training Program TP-5901, Revision 4, “Qualification and Certification Program for Nuclear Test Personnel,” dated October 6, 1998

b. Observations and Findings

The NRC inspection team reviewed the requirements for the training of inspection and test personnel documented in Section II of QC-110 and verified that the AGC training requirements comply with the regulatory requirements of Criterion II of Appendix B to 10 CFR Part 50 and ANSI/ASME N45.2-1977. The NRC inspection team also confirmed that TP-5900 and TP-5901 conform to the training requirements documented in QC-110.

The NRC inspection team reviewed a sample of training records for conformance to the training requirements documented in TP-5900 and TP-5901. The training records for the following AGC inspection and test personnel were reviewed:

- AGC Valve Stamp No. 14
- AGC Valve Stamp No. 12
- AGC Valve Stamp No. 99
- AGC Valve Stamp No. 58

Each of these AGC staff members performed the inspection and test activities documented on the component route sheets for Quality Assurance Instructions (QAIs) 3254 and 32486. QAI 3254 provides for inspection and test of a safety relief valve (SRV) to ensure conformance to ASME Code, Section III, Class 3, requirements. QAI 32486 provides for the inspection and test of an SRV to ensure conformance to ASME Code, Section III, Class 2, requirements. The inspection and test activities documented on the component route sheets include dimensional inspection, hydrostatic testing, and functional testing of the SRVs.

The training records for the above inspection and test personnel document that each individual has been qualified to the requirements of TP-5900 or TP-5901. Each training record documents an annual review of each individual’s qualifications for the next 12 months or until the 3-year recertification is required, if the recertification date is within the next 12 months.

AGC maintains personnel training records in a controlled database entitled, "Personnel Qualifications/Certifications." The database documents, in part, the certification dates, the recertification dates, and the annual evaluation dates for personnel qualified to TP-5900 or TP-5901.

c. Conclusions

The NRC inspection team concluded that the AGC training program for inspection and test personnel is consistent with the regulatory requirements of Criterion II of Appendix B to 10 CFR Part 50 and the guidance in ANSI/ASME N45.2-1977. The NRC inspection team also concluded that the training records reviewed as part of this inspection conform to the requirements of QC-110 and applicable training procedures. The NRC inspection team identified no significant findings.

3. Design Control

a. Inspection Scope

The NRC inspection team reviewed AGC policies and implementing procedures that govern the design control activities to verify compliance with the requirements of Criterion III, "Design Control," of Appendix B to 10 CFR Part 50. More specifically, the NRC inspection team reviewed the following policies and procedures established by AGC:

- QC-110, Section 3, "Design Control," Revision 37, dated December 8, 2008
- DOI 44-3001, Revision 13, "Revision of Drawings—Section III," dated March 21, 2008
- DOI 44-3003, Revision 4, "Drawing Checking and Approval," dated June 29, 2004
- DOI 44-3004, Revision 13, "Engineering Document Control," dated March 18, 2008
- DOI 40-3006, Revision 8, "Design Control Procedure," dated June 29, 2004

The NRC inspection team also reviewed the following PO documents for recent manufactured relief valve packages to verify effective implementation of AGC design control requirements:

- PO 45606428—Surry Power Station
- PO 1023530—Indian Point Nuclear Generating Unit
- PO QP081141—Joseph M. Farley Nuclear Plant

b. Observations and Findings

Section 3 of QC-110 describes the requirements for order acceptance, verification, and control of design activities and documentation used for AGC's relief valve products. The design process includes activities to translate design inputs into design documents that are then used to manufacture the item consistent with applicable procedures.

As detailed below, the NRC inspection team reviewed the following design documentation packages to verify that AGC is implementing its design control process in a manner consistent with regulatory requirements its policies and procedures.

PO 45606428—Surry Power Station

Design Specification No. Sup-0062, Revision 2, dated November 3, 1993, through Addendum 3, dated May 2, 2006, submitted by an AGC customer, provided the design specifications for the safety valves delivered in 2009. AGC QAI 32382, Revision 5, dated May 4, 1993, specified the AGC design and manufacturing documents associated with the subject safety valve design. For example, QAI 32382 listed the design drawings, assembly instructions, ASME Code requirements, welding requirements, QA requirements, material specifications, test requirements (hydrostatic, setpoint, and accumulation), design requirements, and capacity requirements.

Design Specification No. Sup-0062, Revision 2, stated that the safety relief valve design must meet the requirements of Section III, Division 1, of the ASME Boiler and Pressure Vessel Code (hereafter referred to as the ASME Code), 1977 Edition with the Summer 1977 Addenda. Although Design Specification No. Sup-0062, Revision 2, did not authorize the use of any specific ASME Code cases, it did identify NRC Regulatory Guide (RG) 1.84, "Design, Fabrication, and Materials Code Case Acceptability, ASME Section III," as a document that applies to the appropriate safety relief valve design. In addition, 10 CFR 50.55a(b)(4) allows the use of an ASME Code case listed in RG 1.84 as an alternative to the applicable ASME Code, Section III, requirement, provided that the conditions specified in RG 1.84 are applied. Section 5, "Applicable Code Cases," of QAI 32382 listed ASME Code Case N-100, "Pressure Relief Valve Design Rules, Section III, Division 1, Class 2 and 3," as one of the ASME Code cases used in the design of the subject safety relief valve design. RG 1.84 approved the use of ASME Code Case N-100 on the condition that it can be demonstrated how the pressure relief function is ensured when stress limits are used that are in excess of those specified for the upset operation condition. Section 3.3.2.2 of QC-110 requires that the design analysis documentation define the design inputs and their sources, provide the results of literature searches or other applicable background data, and identify assumptions and indicate those that must be verified as the design proceeds. The NRC inspection team discussed the use of ASME Code Case N-100 in this application with AGC personnel and concluded that AGC did not document the applicable RG 1.84 conditions for ASME Code Case N-100 in a design analysis as required by 10 CFR Part 50.55a (b)(4). AGC's failure to document the application of the ASME Code Case N-100 conditions in the design analysis for the safety relief valve design is identified as Nonconformance 99900293/2009-201-02.

PO 1023530—Indian Point Nuclear Generating Unit

Westinghouse Electric Corporation Design Specification 67657, Revision 4, dated February 2, 1970, submitted by an AGC customer, provided the design specifications for the safety relief valves delivered in 2009. AGC QAI 32280, Revision 58, dated July 22, 1996, specified all AGC design and manufacturing documents associated with the subject relief valve design. Design Specification 67657, Revision 4, stated that the relief valve design must meet the requirements of the 1965 edition of Section VIII, Division 1, "Pressure Vessels," of the ASME Code.

Section 3.3.1.2 of QC-110 requires that an applications engineer prepare a design checklist which defines the design requirements of the ASME Code, design specification, and customer order. The design checklist must document the review of the applicable design inputs, such as design specifications, performance requirements, and codes and standards. For example, items included on the design checklist include testing considerations, environmental conditions, design requirements, QA requirements, ASME Code conformance, material compatibility, stress analysis, independent review, prototype performance, and qualification testing. The applications engineer signs off on the design checklist during design reviews for each

requirement on the checklist. When all actions have been completed, the nuclear applications engineering manager approves the design checklist. AGC staff could not locate the design checklist for PO 1023530 during the NRC inspection. The NRC inspection team identified that AGC'S failure to provide documented evidence that the design checklist for this safety relief valve design was completed as required by QC-110 as another example of Nonconformance 99900293/2009-201-02.

PO QP081141—Joseph M. Farley Nuclear Plant

Specification No. SS-1102-56, Version 5.0, "Specification for Safety and Relief Valves for ASME Section III for Joseph M. Farley Nuclear Plant, Units 1 and 2," dated August 25, 2005, submitted by an AGC customer, provided the design specifications for the relief valve design delivered in 2009. QAI 81P-83, Revision 17, dated January 14, 2000, specified all AGC design and manufacturing documents associated with the subject relief valve design. Specification No. SS-1102-56 stated that the subject relief valve design must meet the requirements of ASME Code, Section III, Division 1, 1974 Edition with the Summer 1975 Addenda.

The NRC inspection team requested a copy of the design checklist for this PO; however, the AGC staff could not locate the design checklist for PO QP081141 during the NRC inspection. The NRC inspection team identified AGC'S failure to provide documented evidence that the design checklist for this relief valve design was completed as another example of Nonconformance 99900293/2009-201-02.

The NRC inspection team noted that the safety relief valve capacity specified in QAI 81P-83 was consistent with the capacity identified in Specification No. SS-1102-56. However, AGC did not document the calculation for determining the relieving capacity of the safety relief valves in a design analysis, and the calculation was not approved or reviewed in accordance with Section 3.3.2.2 of QC-110. NC-7615, "Stamped Relieving Capacity," of ASME Code, Section III, Division 1, 1974 Edition with the Summer 1975 Addenda, states that the stamped relieving capacity of valves must be determined by the rules in NC-7800. NC-7811(a), "Responsibility for Certification," states that the manufacturer of pressure relief valves shall be responsible for having the relief capacity of its valves certified as required in the subarticle. NC-7825.3, "Calculation of Official Relieving Capacity," states that the official relieving capacity must be calculated by the appropriate formula in NC-7825.2. AGC'S failure to provide documented evidence that the relieving capacity had been calculated and obtain the required design review of the safety relief valve capacity calculation, in accordance with 10 CFR Part 50.55a (b)(4), is another example of Nonconformance 99900293/2009-201-02.

c. Conclusions

The NRC inspection team concluded that, with the exception of the items identified in Nonconformance No. 99900293/2009-201-02, the AGC staff was effectively implementing the AGC design control process consistent with the regulatory requirements of Criterion III of Appendix B to 10 CFR Part 50 and the provisions of QC-110 and applicable implementing procedures. The NRC inspection team identified no significant findings.

4. Procurement Document Control

a. Inspection Scope

The NRC inspection team reviewed AGC policies and procedures for procurement of materials, equipment, and services to verify compliance with Criterion IV, "Procurement Document Control," of Appendix B to 10 CFR Part 50. More specifically, the NRC inspection team reviewed Section IV, "Procurement Document Control," of QC-110 that documents the policies for procurement document controls, as well as the procedures listed below that govern the implementation of the applicable regulatory requirements and contractual technical and quality requirements.

In addition, the NRC inspection team inspected the receiving, shipping, handling, and storage processes and activities as they relate to the material control policies, procedures, and activities to ensure the quality of materials and components purchased for use in the manufacturing process.

Within the scope of this inspection activity, the NRC inspection team reviewed the following AGC policies, procedures, and contract documentation:

- QC-110, Revision 37, dated December 8, 2008
- Design Specification for Pressurizer Safety Valve for SHIN-Wolsong Nuclear Power Plant, Units 1 and 2, 1Q129-FS-DS701
- Closed Purchase Order Package for Doosan Heavy Industries America AP1000 Pressurizer Safety (Relief) Valve, Sales Order Number U847550000, U847560000, QAI 32671, Purchase Order 110091648/110091650
- Completed AP1000 Pressurizer Safety (Relief) Valve Package for Doosan Heavy Industries America QAI
- Completed Quality Assurance Package for Doosan Heavy Industries America AP1000 Pressurizer Safety (Relief) Valve, Package Number KHNP DOC# 1-810-Z-49-001, QAI 32671, Purchase Order 110091650/N182-04JX
- Open Purchase Order Package for Westinghouse China Nuclear Island AP1000 Pressurizer Safety (Relief) Valve, Sales Order Number G221160000, Purchase Order 4500261837, QAI 32784
- DOI ME-20-3001, Revision 3, "Controlling Part Routing, Manufacturing Methods," a manufacturing engineering operating procedure used for generating part routing and manufacturing methods for the manufacturing route sheet (MRS)
- DOI RSS-33-3001, Revision 9, "Receiving, Shipping, Handling and Storage," a receiving, shipping, and storage procedure which establishes controls for receiving, storing, and shipping of materials
- DOI IE-21-3001, Revision 10, "Manufacturing Route Sheets for Section III Parts," an industrial engineering instruction used to clarify the MRS documentation for parts produced in accordance with ASME Code, Section III, and QC-110 requirements

- DOI PUR-30-3003, Revision 7, “Procurement of Production Material and Services,” a procurement instruction used to control the procurement of materials and services for production
- DOI QA-48-3023, Revision 6, “Upgrading of Stock Material to Meet ASME, Section III Requirements, a QAI used to control the upgrading (dedication) of stock materials to comply with ASME Code, Section III, requirements
- DOI PC-31-3006, Revision 9, “Material Substitution,” a production control instruction used to ensure that substitution of materials required by the engineering group on the bill of materials, as specified on shop orders or MRSs, is properly approved, reviewed, and implemented
- DOI PC-31-3009, Revision 2, “Material Movement through Manufacturing,” a production control instruction used to establish the control of the material movement of components through the manufacturing process
- DOI GE-40-3010, Revision 4, “Control of Purchased Design Analysis Computer Programs,” a general engineer instruction used to establish the responsibilities and controls for computer programs purchased for analysis of components built to ASME Code, Section III, and QC-110 requirements
- DOI QA-48-3022, Revision 5, “Review of Supplier Documentation,” a QAI used to control and review supplier documentation in accordance with ASME Code, Section III, and QC-110 requirements
- DOI QA-48-3036, Revision 6, “Quality Records Control,” a QAI used to control and disposition quality-related records
- DOI QA-48-3029, Revision 2, “Quality Records Documents and Records Policy,” a QAI used to control additions, changes, and corrections to QAP documentation

b. Observations and Findings

The NRC inspection team reviewed a completed package for Doosan Heavy Industries America Korean Gen 2 design pressurizer safety (relief) valves and a PO package for the Westinghouse China nuclear island AP1000 pressurizer safety (relief) valve.

The NRC inspection team reviewed customers’ design specifications and POs as they related to material and component requirements. The NRC inspection team reviewed AGC-generated drawings, bill of materials, and POs, as well as the QA and QC activities for materials and components receiving and controls. The NRC inspection team verified that the AGC staff was implementing QC-110 and applicable implementing procedures as documented. The NRC inspection team also confirmed that adequate measures were in place and being implemented to ensure that applicable regulatory requirements, design bases, and other requirements necessary to ensure adequate quality are suitably included or referenced in the documents pertaining to the procurement of material, equipment, and services, whether purchased by the applicant or by its contractors or subcontractors.

c. Conclusions

The NRC inspection team concluded that the requirements of the AGC procurement document control process conform to the regulatory requirements of Criterion IV of Appendix B to 10 CFR Part 50, and that the AGC staff was implementing this process in accordance with QC-110 and applicable implementation procedures in support of procurement document control requirements. The NRC inspection team identified no significant findings.

5. Document Control

a. Inspection Scope

The NRC inspection team reviewed AGC policies and procedures for document control to verify compliance with Criterion VI, "Document Control," of Appendix B to 10 CFR Part 50. More specifically, the NRC inspection team reviewed QC-110 and the applicable implementing procedures listed below that govern the review, approval, revision, and withdrawal of documents, such as instructions, procedures, and drawings that affect quality-related activities. The NRC inspection team reviewed quality-related documents and applicable changes to assess the existing document control process and to verify that authorized personnel perform approval and release activities.

Within the scope of this inspection activity, the NRC inspection team reviewed the following AGC policies, procedures, and related documentation:

- QC-110, Revision 37, dated December 8, 2008
- DOI QA-48-3036, Revision 6, "Quality Records Control," a QAI used to control and disposition quality-related records
- DOI QA-48-3029, Revision 2, "Quality Records Documents and Records Policy," a QAI used to control additions, changes, and corrections to QAP documentation
- DOI QA-48-3022, Revision 5, "Reviewer of Supplier Documentation," a QAI used to control and review supplier documentation in accordance with ASME Code, Section III, and QC-110 requirements
- DOI GE-40-3002, Revision 18, "Document Status Record," a general engineer instruction which establishes the responsibilities and procedures used in preparing, revising, distributing, and implementing document status records for specific customer orders, as implemented by QAIs and QAPs
- DOI GE-40-3003, Revision 10, "Computer Programs Verification," a general engineer instruction used to establish a standard procedure to document, verify, and retain computer programs purchased for stress analyses and set pressure determination in accordance with the requirements of ASME Code, Section III, and QC-110 requirements
- DOI GE-40-3010, Revision 4, "Control of Purchased Design Analysis Computer Programs," a general engineer instruction used to establish the responsibilities and controls for computer programs purchased for analysis of components built to ASME Code, Section III, and QC-110 requirements

- DOI DD-44-3004, Revision 13, “Engineering Document Control,” a drafting instruction used to establish the responsibilities and control additions, changes, and corrections to QAP documentation
- DOI GE-44-3005, Revision 12, “Engineering Document Revision,” a drafting instruction used to describe the system for revising engineering documents
- DOI GE-44-3001, Revision 13, “Revision of Drawings,” a drafting instruction used to establish the responsibilities and procedures for the revision of drawings in accordance with ASME Code, Section III, and QC-110 requirements
- DOI PC-31-3008, Revision 3, “Changes to Active Factory Orders,” a production control procedure to properly review and process changes to an existing scheduled, but unshipped, customer order
- DOI IE-21-3001, Revision 10, “Manufacturing Route Sheet for Section III Parts,” an industrial engineering instruction used to clarify the MRS documentation procedure for parts produced in accordance with ASME Code, Section III, and QC-110 requirements

b. Observations and Findings

The NRC inspection team witnessed procurement and receiving activities and observed activities relating to the ordering of materials, parts, and components consistent with data sheet drawings and QAs. The NRC inspection team witnessed the receiving of materials and parts, QA reviews of PO and supplier documentation, and quality control verification of material traceability and dimensional checks. No manufacturing or assembling activities took place during the NRC inspection; therefore, the NRC inspection team was unable to review related documentation.

The NRC inspection team interviewed engineering, QA, quality control, procurement, and receiving AGC staff members to discuss document control relating to design, purchasing, receiving, and documentation activities. Through these inspection activities, the NRC inspection team verified that AGC has measures in place that are being implemented to ensure that manufacturing documents, including changes and revisions to this documentation, are reviewed for adequacy, approved for release by authorized personnel, and distributed to and used at the location where the prescribed activities are performed.

c. Conclusions

The NRC inspection team concluded that the AGC process used for document control is being effectively implemented consistent with the regulatory requirements of Criterion VI of Appendix B to 10 CFR Part 50. The NRC inspection team identified no significant findings.

6. Inspection

a. Inspection Scope

The NRC inspection team reviewed AGC policies and procedures governing inspection activities to ensure compliance with Criterion X, “Inspection,” of Appendix B to 10 CFR Part 50.

More specifically, the NRC inspection team reviewed QC-110 and the applicable implementing procedure that governs inspections of activities affecting quality. In addition, the NRC inspection team reviewed a representative sample of production orders and observed inspection activities performed at the AGC manufacturing facility to verify effective implementation of such requirements. The NRC inspection team evaluated the following AGC policies and procedures as part of this inspection effort:

- QC-110, Section 10, "Inspection," Revision 37, dated March 30, 2009
- RS-33-3301 "Receiving Shipping Handling and Stores," Revision 9, dated January 9, 2004

The NRC inspection team also observed and reviewed receipt inspections for several items, including bar stock, springs, valve castings, and valve parts procured by AGC. The NRC inspection team reviewed the specific receiving inspection checklists (QC-58) for the following parts:

- A00617—Part #929045000 5" Bar ASME SA105
- A02291—Part #911011750 1.75" ASME SA479
- A01287—Part #929046000 6" Bar ASME SA105
- A02202—Part #946043500 3.5" Bar ASME SA193 GR B6
- 299826—Part #504ss4295 Bonnet ASME SA351 GR CF8M

b. Observations and Findings

The NRC inspection team reviewed sections of QC-110 and the associated implementing procedures to verify that AGC maintains a program that effectively controls inspections used to verify whether an item or activity conformed to specified requirements. QC-110 establishes controls to ensure that activities affecting quality conform to documented instructions, procedures, and drawings. AGC quality control inspectors (QCIs) perform inspections in accordance with prescribed procedures for receiving, in-process, and final inspections.

b.1. Receiving Inspection

QC-110, Section 8.3.2, "Receiving Inspection," and RSS-33-3301 describe the process for performing receiving inspections. QC-110 establishes responsibilities and standard direction for inspecting materials, items and services, and consumables for use in AGC manufacturing operations. QC-110 also describes the process for identifying source material and those items with shelf lives or cure dates to ensure that this material is controlled properly and identified with shelf-life or cure-date information. RSS-33-3301 requires receipt inspections of all incoming material to ensure that all PO requirements have been met. Initial receipt inspections are used to confirm that (1) the material delivered is consistent with the supplier's documentation, (2) all required paperwork (such as material data sheets and certificates of conformance) have been provided, and (3) the shipment is free of any signs of shipping damage that may affect the quality of the components being received. Other characteristics which need to be verified include, but are not limited to, configuration, identification, dimensional, physical characteristics, and cleanliness. AGC staff members record additional information from these inspections, including item quantity, receiver number, lot number, and receipt date, as applicable, in the AGC receiving inspection log (an electronic database) and on an item's hold tag.

The NRC inspection team observed that the AGC receiving inspector verified dimensional aspects of the item, noted the item's receiving condition, identified the item number and part number documentation on the PO and packing slip, and confirmed the existence of a certificate of conformance for each specimen, if included. The receiving inspector routed the purchase slip and accompanying technical documentation to the QA group for evaluation and created a hold tag for each incoming item.

b.2. In-Process and Final Inspections

QC-110, Section 10, "Inspection," defines the general requirements for the performance of in-process (e.g., assembly) and final inspections. It includes provisions to ensure that parts and material be inspected dimensionally and visually, in accordance with the MRS and the applicable drawing or PO requirement specifications, and documented appropriately. QC-110 also provides a set of forms the QCIs used to identify materials, parts, or items that do not properly conform to technical specification requirements.

The NRC inspection team reviewed a sample of completed inspection records and associated calibration inspection records (QC-107), defective stock forms (QC-221), and material rejection notices (QC-45A-1D) and observed a single in-process inspection performed by AGC QCIs. The NRC inspection team verified that AGC QCIs adequately identified the items being inspected, verified the items in accordance with required documentation, and performed and recorded all visual, dimensional, or other inspection information on the required inspection verification sheets. Additionally, the NRC inspection team verified that the QCIs identified and documented all measurement and test equipment (M&TE), verified equipment calibration status, and confirmed that all M&TE scale and precision were consistent with procedural requirements before use. The NRC inspection team identified no significant findings.

c. Conclusions

The NRC inspection team concluded that the requirements for inspections affecting quality conform to the regulatory requirements of Criterion X of Appendix B to 10 CFR Part 50 that and AGC staff was effectively implementing these requirements in accordance with QC-110 and the applicable implementation procedures. The NRC inspection team identified no significant findings.

7. Test Control

a. Inspection Scope

The NRC inspectors reviewed AGC's QA program commitments and controls for test programs designed to demonstrate that items will perform satisfactorily in service to assess compliance with the requirements of Criterion XI, "Test Control," of Appendix B to 10 CFR Part 50. Specifically, the NRC inspectors reviewed the following AGC policies and procedures:

- QC-110
- QAI-3254, Revision 69, dated August 26, 1993
- Document Status Record (DSR) No. 3254, Revision 2, dated May 13, 2009
- Valve Assembly and Test Instructions for Order No. G281260000
- Component Route Sheet for Component N56898-00-0109
- Test Procedure T-16070, Revision 38, dated November 4, 2003

- Valve Drawing DS-C-56898, Revision No. C
- Inspection Record QC-84 for Serial No. N56898-00-0109
- Valve Test Report for Serial No. N56898-00-0109, signed off July 9, 2009
- ASME Code Data Report for Serial No. N56898-00-0109
- QAI No. 32486, Revision 17, dated January 14, 2000
- DSR No. 32486, Revision 14, dated April 20, 2006
- Valve Assembly and Test Instructions for Order No. G279460000
- Component Route Sheet for Component N99930-00-0003
- Test Procedure T-16820, Revision 4, dated May 12, 2000
- Test Procedure VTS-43119, Revision 1, dated March 6, 2006
- Valve Drawing DS-C-99930, Revision A
- Inspection Record QC-84 for Serial No. N99930-00-0003
- Valve Test Report for Serial No. N99930-00-0003, signed off June 26, 2009
- ASME Code Data Report for Serial No. N99930-00-0003

b. Observations and Findings

b.1 Test Records

The NRC inspection team reviewed the inspection and test documents for SRVs N56898-00-0109 and N99930-00-0003, listed above, for conformance with the inspection and test requirements of Section XI of QC-110. SRV N56898-00-0109 is designated as an ASME Code, Section III, Class 3 valve, and SRV N99930-00-0003 is designated as an ASME Code, Section III, Class 2 valve on their respective valve assembly and test instructions. The ASME Code designation for each valve requires, in part, that the ANI witness and sign off on the hydrostatic and functional tests performed for each valve and that an ASME Code data report be issued for each valve.

The NRC inspection team verified that each valve package conformed to AGC inspection and test requirements including:

- The route sheet for the dimensional inspection, hydrostatic test and functional test specified the correct procedures and revisions.
- The individual performing each inspection or test signed off on the route sheet.
- Hydrostatic and functional testing was performed in accordance with the test requirements documented on the valve assembly and test instructions.
- The ANI signed off on the hydrostatic and functional tests on the route sheets.
- Pre- and post-calibration was performed and documented for the pressure gages.
- The valve test report documented the results of the pressure tests, which were signed off by the engineering group.
- An ASME Code data report was issued for each valve.

The NRC inspectors concluded that the documents reviewed satisfactorily addressed the AGC inspection and test requirements. The NRC inspection team identified no findings in this area.

b.2 Test Performance

During the inspection period, the NRC inspectors observed AGC personnel perform two hydrostatic pressure tests and a nondestructive examination related to specific nuclear valve components. The NRC inspectors verified that the AGC personnel (1) were cognizant of the requirements for performance of the tests in accordance with written test instructions, (2) verified the adequacy of the test instrumentation used for each test before conducting the test, (3) recorded test data in accordance with written instructions, and (4) followed the test control procedures and material route sheets, including obtaining proper quality control and ANI oversight as required. The NRC inspection team identified no findings in this area.

c. Conclusions

The NRC inspection team concluded that AGC staff was effectively implementing the AGC test control process consistent with the regulatory requirements of Criterion XI of Appendix B to 10 CFR Part 50 and the provisions of QC-110 and applicable implementing procedures. The NRC inspection team identified no significant findings.

8. Control of Measuring and Test Equipment

a. Inspection Scope

The NRC inspection team reviewed AGC's QA program commitments and controls for control of measuring and test equipment to verify that the guidance adequately described the process and implementation consistent with the requirements of Criterion XII, "Control of Measuring and Test Equipment," of Appendix B to 10 CFR Part 50. Specifically, the NRC inspectors reviewed the following AGC procedures and calibration records and performed the following activities:

- QC-110, Section XII, "Control of Measuring and Test Equipment,"
- AGC M&TE computer database
- discussions with AGC QCIs and technician
- walkdowns of AGC's shop floor

The NRC inspectors also reviewed a sample of equipment calibration records and the disposition methods for out-of-tolerance instrumentation to verify compliance with the requirements for control of measuring and test equipment.

b. Observations and Findings

The NRC inspection team verified that the AGC controls for control of measuring and test equipment were consistent with the requirements described in Section XII of QC-110 including:

- Pressure gages used on ASME Code, Section III, tests must be calibrated before and immediately following each series of tests.
- The manufacturing supervisor is responsible for the storage and issuance of the M&TE that is stored in the tool crib.

- A formal program for the control of inspection tools, gages, and measuring equipment is established as a computer program and maintained by the quality control manager (QCM) to ensure that all tools, gages, and equipment are calibrated at the required intervals.
- Primary standards must be recalibrated yearly against certified measurement standards with known relationships to national standards.
- M&TE must be calibrated to a procedure that is listed in CPIE-001, "Calibration Procedures for Inspection Equipment."
- The QCI shall attach a unique serial number to each piece of M&TE.
- M&TE must be recalibrated periodically, in accordance with the schedule in Inspection Instruction Q-519, Revision 61, "Tool and Gage Calibration," dated September 28, 2008.
- Regardless of the calibration cycle, measuring equipment must have its calibration accuracy verified immediately after the following types of inspection: receiving inspection of finished items, wall thickness inspection, and final inspection. This calibration is in addition to the routinely scheduled calibration cycle.
- All M&TE assigned to the quality control department must be stored in the quality control inspection area or the tool and gage inspection area.
- All M&TE assigned to the manufacturing group must be stored in the tool crib.
- All master standards and setting gages must be stored in the gage laboratory.

The NRC inspection team identified three concerns during this review. A set of gage blocks (INSP110F) used as a primary standard was last calibrated by ESSCO Calibration Laboratory on July 7, 2007 (Certificate of Calibration No. 39073). Section 12.3.1.2 of QC-110 requires that primary standards be calibrated yearly. Inspection Instruction No. Q-519, "Tool and Gage Calibration," documents a 1-year calibration cycle for the gage blocks. The gage blocks were, therefore, out of calibration during the NRC inspection period (July 13–July 17, 2009). The M&TE computer database recorded the last calibration date for the gage blocks as August 12, 2008, and recorded a calibration due date of August 8, 2009, for the gage blocks. The container of gage blocks identified a calibration due date of July 7, 2010.

Secondly, the routing sheets for SRVs N56898-00-0109 and N99930-00-0003 documented that a final dimensional inspection was performed for each valve before hydrostatic and functional testing was performed. The NRC inspectors confirmed that the dimensions shown on Valve Drawings DS-C-99930 and DS-C-56898 were checked and documented on Form QC-84. However, the tag numbers of the inspection gages and the post calibration checks of the inspection gages were not documented for either valve. Section 12.3.1.6.2 of QC-110 requires, in part, that the calibration accuracy of M&TE be verified immediately after final inspection is performed, and documented on Form QC-107

Thirdly, Section 4.6 of AGC Inspection Instruction Q-519, "Tool and Gage Calibration," Revision 61, dated September 28, 2008, requires, in part, that a daily check of the temperature and humidity in the calibration area be performed and documented on Form QC-522. Contrary to

the above, AGC failed to implement its procedure to control M&TE as required. More specifically, on July 16, 2009, an NRC inspector noted that AGC staff had not documented the temperature and humidity in the calibration area since July 6, 2009.

The NRC inspection team identified these issues as Nonconformance 99900293/2009-201-03.

c. Conclusions

The NRC inspection team concluded that, with the exception of the items identified in Nonconformance 99900293/2009-201-03, the AGC staff was effectively implementing the AGC process for the control of M&TE consistent with the regulatory requirements of Criterion XII of Appendix B to 10 CFR Part 50 and the provisions of QC-110 and applicable implementing procedures.

9. Control of Nonconforming Materials, Items, And Services

a. Inspection Scope

The NRC inspection team reviewed AGC policies and procedures for control of nonconforming materials, items, and services to verify compliance with Criterion XV, "Nonconforming Source Materials or Items," of Appendix B to 10 CFR Part 50. More specifically, the NRC inspection team reviewed Section 15, "Nonconforming Source Materials or Items," of QC-110 which documents the policies and procedures for controlling nonconforming source materials and items. The NRC inspection team also reviewed the implementing procedures listed below for the AGC nonconformance process and a sample of nonconformance reports initiated during the previous 36 months. The nonconformances reviewed resulted primarily from deficiencies identified by AGC personnel. The NRC inspection team discussed the nonconformance process with responsible AGC management and staff to confirm that the applicable regulatory requirements are being effectively implemented.

Within the scope of this inspection, the NRC inspection team reviewed the following AGC procedures and documents:

- QC-110, Section 15, Revision 35, dated July 18, 2007
- QA-48-3039, Revision 5, "Control of Nonconforming Product," dated May 26, 2004
- QA-48-3047, Revision 2, "Nonconformance Analysis," dated July 2, 2004
- QA-48-3051, Revision 0, "Complaint Report," dated May 10, 2002
- QA-48-3052, Revision 0, "Preventive Action," dated July 16, 2003
- FA-29-3013, Revision 3, "Reprocess, Repair and Data Collection of Manufacturing Non-Conformances," dated April 7, 2004

b. Observations and Findings

Section 15 of QC-110 documents the AGC requirements and assigned responsibilities for control of nonconforming items, services, and activities. Manufacturing supervisors or operating

personnel must report detected or suspected nonconformances to the QCI or the QCM. The QCI or QCM documents and reports any potential nonconformance for disposition by the material review board. The QA manager is responsible for ensuring that nonconformances are identified, reported, documented, and dispositioned in accordance with QC-110 and Section III of the ASME Code. QC-110 describes the AGC process used to address scrap and minor and major deviations.

The NRC inspection team reviewed samples of nonconformances from the last 3 years. The NRC inspection team verified that the reviewed material rejection notices provided adequate information regarding the identification of the deficiency, documentation, evaluation, actions taken for disposition, technical justification, reference to instructions or procedures for repair and rework activities, re-inspection of repaired and reworked items, and approval of the material review board.

c. Conclusions

The NRC inspection team concluded that the AGC staff was effectively implementing the AGC process for the control of nonconforming source materials or items consistent with the regulatory requirements of Criterion XV of Appendix B to 10 CFR Part 50. The NRC inspection team identified no significant findings.

10. Corrective Actions

a. Inspection Scope

The NRC inspection team reviewed AGC policies and procedures for corrective actions to verify compliance with Criterion XVI, "Corrective Action," of Appendix B to 10 CFR Part 50. More specifically, the NRC inspection team reviewed Section 16, "Corrective Action," of QC-110 which documents the policies and procedures for the AGC corrective action program. The NRC inspection team also reviewed the following CARs: N-309, N-312, I-317, N 325, N-342, N-343, I-353, I-354, and N-355. These CARs resulted primarily from deficiencies identified by AGC personnel or from external audits of AGC by outside organizations. The NRC inspection team discussed the corrective action process with responsible AGC management and staff to verify that the applicable regulatory requirements are being effectively implemented.

b. Observations and Findings

The inspectors noted that QC-110 defined the process to identify and implement corrective and preventive actions. In addition, it established the method to eliminate the causes of actual or potential nonconformances and the initiation of corrective and preventive action to preclude recurrence. This procedure detailed the roles and responsibilities, documentation requirements, internal reviews, timeliness requirements, and preventive actions to address identified deficiencies. The AGC corrective action program is also the primary method for documenting and resolving unsatisfactory quality trends for AGC's suppliers.

AGC's CAR document was used to describe issues, document the root cause analysis and identify short term and long term corrective actions. The inspectors noted that the CAR process included, but was not limited to; a description of the issue, investigation and evaluation documentation results, and prescribed actions to be taken.

The NRC inspectors reviewed a sample of CARs to verify the implementation of the corrective

action process. The NRC inspectors confirmed that the cause of significant or recurring conditions adverse to quality are determined, corrected, reported, and evaluations of the effectiveness of implemented corrective actions are documented. The NRC inspection team noted that most of the CARs describe the condition adverse to quality, cause and corrective action taken, review and approval by the responsible authority, follow-up action if needed, and the completion date. However, the NRC inspection team identified two instances where the CARs were not dispositioned in accordance with the vendor's procedural requirements. Specifically, CAR I-317, dated August 18, 2007 regarding aspects of AGC's training program, did not describe any corrective action taken, actions to prevent recurrence, the date of completion, or follow-up action, as required by QC-110. In addition, CAR N-342, dated August 8, 2008, was not completed in the thirty day required timeframe described in QC-110, and follow-up actions, including notifying the general manager and developing supplemental actions, were not completed. The NRC inspection team identified these failures to implement QC-110 regarding corrective actions associated with potential safety hazards as examples of Nonconformance 99900293/2009-201-04.

In addition, the NRC inspection team noted that QC-110 did not provide a mechanism to ensure that conditions adverse to quality which are identified by AGC's customers are systematically reviewed, documented, and addressed. Specifically, the NRC inspection team noted, through discussions with AGC staff members that components which were returned to AGC due to nonconforming specifications or other quality-related issues, were not consistently directed to the CAR manager for review and evaluation and no documentation that specifically identified customer-related issues was identified during the inspection. The failure to provide a mechanism to identify, evaluate, and document customer-reported quality concerns is identified as another example of Nonconformance 99900293/2009-201-04.

c. Conclusions

The NRC inspection team concluded that, with the exception of the items identified in Nonconformance 99900293/2009-201-04, the AGC process used for corrective actions is being effectively implemented consistent with the regulatory requirements of Criterion XVI of Appendix B to 10 CFR Part 50.

11. Control of Purchased Material, Items, and Services

a. Inspection Scope

The NRC inspection team reviewed the AGC policies and implementing procedures governing the control of internal and external audits to verify compliance with the requirements of Criterion VII, "Control of Purchases Materials, Items, and Services;" and Criterion XVIII, "Audits," of Appendix B to 10 CFR Part 50. The NRC inspection team reviewed a sample of internal and external audit reports to evaluate compliance with program requirements and to determine whether implementation of those requirements was adequate. In addition, the NRC inspection team reviewed audits performed by external organizations and AGC's responsiveness to those audits. The NRC inspection team also reviewed the adequacy and timeliness of corrective actions taken to resolve deficiencies identified by the audit findings.

The NRC inspection team reviewed the following documents for this inspection area:

- Section VII, "Control of Purchased Material, Items, and Services," QC-110, Revision 37, dated December 8, 2008

- Section XVIII, “Audits,” QC-110, Revision 37, dated December 8, 2008
 - DOI QA-48-3037, Revision 2, “Quality Assurance Audits,” which provides a procedure for performing QA internal and external audits
 - AGC’s 2009 Internal Audit Schedule
 - AGC’s 2009 External Audit Schedule
 - Internal Audit Package, Procurement Document Control, performed July 17, 2007
 - Internal Audit Package, Document Control, performed May 29, 2009
 - External Audit Package, Stainless Foundry, performed June 12, 2008
 - External Audit Package, Metal Dynamics, performed September 29, 2008
 - Letter from D.F. McGann, Susquehanna Steam Electric Station, to David Tuttle, Anderson Greenwood AGC, regarding NUPIC Joint Audit of Anderson Greenwood AGC, dated March 5, 2009
 - AGC CARs N325, N-318, N-326, and N-327
 - Letter from Chad Holderbaum, Westinghouse Electric Company, to David Tuttle, Anderson Greenwood AGC, regarding Supplier Quality Program Audit Report, dated April 19, 2007
- b. Observations and Findings
- (1) Internal Quality Audit—Procurement Document Control Process

The NRC inspection team reviewed AGC’s July 12, 2007, audit of its internal procurement document control process. This audit was documented on AGC’s “Quality Assurance Internal Audit, Audit Summary Sheet, Q.C.-110.” The internal audit did not identify a deficiency regarding the AGC internal procurement document control process. The NRC inspection of AGC’s procurement document control process described within this report also found that AGC staff was implementing the AGC procurement document control process and practices consistent with Criterion IV, “Procurement Document Control,” of Appendix B to 10 CFR Part 50. However, AGC did not perform the procurement document control process internal audit, as well as other required internal audits, in 2008. The vendor initiated CAR 353 to document this nonconformance with an explanation that QA management did not commit the necessary resources to conduct an internal audit. The corrective action for CAR 353 called for additional resources to be applied to internal audits in 2009. The 2009 procurement document control process is currently scheduled for July 2009. The NRC inspection team identified no findings of significance.

(2) Internal Quality Audit—Document Control Process

The NRC inspection team reviewed AGC's May 29, 2009, audit of its internal document control process. This audit was documented on AGC's "Quality Assurance Internal Audit, Audit Summary Sheet, Q.C.-110." This internal audit identified one drawing review deficiency—the nuclear applications engineering manager had not signed all applicable drawings, contrary to the requirements of QC-110, Sections 6.3.4.1 and 5.2.3. The vendor initiated CAR 365 on May 29, 2009, to document and correct the missing signature for Drawing N900600 and Drawing 157460, Revision A. In addition, the NRC review of this internal quality audit determined that the audit was limited to manufacturing documents and did not include the evaluation of process documents, such as DOIs. (Refer to the NRC inspection of AGC's document control process and the resulting finding documented within this report.) The NRC inspection team identified no findings of significance specific to the document control process internal quality audit.

(3) External Quality Audit—Stainless Foundry and Engineering, Inc.

The NRC inspection team reviewed the AGC external audit of Stainless Foundry and Engineering, Inc. (SFE), an approved supplier for quality materials and services, performed February 12–14, 2008. AGC performed this audit as a member company of the Nuclear Industry Assessment Committee (NIAC) to support NIAC vendor review and to assess SFE's performance to determine its continued acceptance as an approved supplier. The NRC inspection team reviewed AGC's assessment plan, the audit results from the NIAC audit of SFE, and the final results letter from AGC to SFE dated October 4, 2008. In addition, the NRC inspection team confirmed the lead auditors qualifications were current at the time of the audit. The NRC inspection team determined that the NIAC audit results of SFE were satisfactory. The NRC inspection team did not identify any findings associated with this external audit.

(4) External Quality Audit—Metal Dynamics Corporation

The NRC inspection team reviewed the AGC external audit of Metal Dynamics Corporation, an approved supplier for quality materials and services, performed March 28, 2007. AGC performed this triennial audit to assess Metal Dynamics' performance and to determine its continued acceptance as an approved supplier for the manufacture and supply of Sub-Safe Level I castings. The NRC inspection team reviewed AGC's notification letter, supplier qualification evaluation, audit checklist, and the final results letter from AGC to Metal Dynamics dated April 17, 2007. In addition, the NRC inspection team confirmed the lead auditors qualifications were current at the time of the audit. The NRC inspection team did not identify any findings associated with this external audit.

(5) NUPIC Joint Audit of Anderson Greenwood AGC

- The NRC inspection team reviewed the results of the NUPIC Joint Audit of Anderson Greenwood AGC performed on March 5, 2007. The audit was performed to evaluate AGC's QA activities associated with nuclear procurement. The NUPIC joint audit identified six findings that AGC addressed in accordance with the AGC corrective action program. The NRC inspection team did not identify any findings associated with this external audit.

(6) Westinghouse Electric Company—Supplier Quality Program Audit Report

The NRC inspection team reviewed the supplier quality program audit report documenting the AGC QA program audit performed on April 13, 2007, by Westinghouse Electric Company. This supplier audit was performed to verify AGC's compliance with the requirements of Appendix B to 10 CFR Part 50, 10 CFR Part 21, and related ASME Code requirements and the implementation of the quality program, as documented in QC-110, Revision 34, dated July 28, 2004. AGC's quality program was determined to meet the requirements of the applicable quality program and was found to be effectively implemented without any noted findings. The NRC inspection team did not identify any findings associated with this external audit.

c. Conclusions

The NRC inspection team concluded that AGC staff was implementing AGC controls for purchasing materials, equipment, and services and audit requirements consistent with the regulatory requirements of Criterion VII and Criterion XVIII of Appendix B to 10 CFR Part 50, respectively. Based on the sample of audits reviewed, the NRC inspection team determined that AGC staff were effectively implementing the AGC policies and associated procedures. The NRC inspection team identified no significant findings.

12. Entrance and Exit Meetings

On July 13, 2009, the NRC inspection team discussed the scope of the inspection with David G. Thibault, AGC General Manager, and AGC management and engineering staff. On July 17, 2009, the NRC inspection team presented the inspection results and observations during an exit meeting with Mr. Thibault and other AGC management and engineering staff. A list of entrance and exit meeting attendees is attached to this report.

ATTACHMENT

1. PERSONS CONTACTED

Thibault D.	AGC General Manager
Tuttle, D.	Quality Assurance Manager
Mauro, J.	Associated QA Engineer
Lambert, A.	Quality Assurance Technician
Gervais, L.	Associated QA Engineer
Dalton, M.	Production Control Coordinator Nuclear Production
Dowd, C.	Nuclear Products Sales & Engineering Manager
Lambert, R.	Shipping, Receiving and Compliance Supervisor
Gagnon, W.	Manufacturing Assistant
Mvette, M.	Special Products Assembly Supervisor
Stevens, C.	Quality Assurance Technician
Uchrinscko, P.	Quality Assurance Engineer
Kim, S.-W.	Quality Evaluation Department, Korea Institute of Nuclear Safety (KINS)
Yang, S-H	Manager, Quality Regulation Department, KINS
Paik, J-Y	Senior Manager, Doosan Heavy Industries America

2. INSPECTION PROCEDURES USED

Inspection Procedure 43002, "Routine Inspections of Nuclear Vendors"

Inspection Procedure 36100, "Inspection of 10 CFR Part 21 and 50.55(e) Programs for Reporting Defects and Nonconformance"

3. LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

No previous NRC inspections had been performed at the Anderson Greenwood Crosby facility in Wrentham, MA, within the 5 years prior to this inspection.

The following items were found during this inspection:

<u>Item Number</u>	<u>Status</u>	<u>Type</u>	<u>Description</u>
99900293/2009-201-01	Opened	Violation	10 CFR Part 21
99900293/2009-201-02	Opened	Nonconformance	Criterion III
99900293/2009-201-03	Opened	Nonconformance	Criterion XII
99900293/2009-201-04	Opened	Nonconformance	Criterion XVI

4. LIST OF ACRONYMS USED

AGC	Anderson Greenwood Crosby
ADAMS	Agencywide Documents Access and Management System
ANSI/ASME	American National Standards Institute/American Society of Mechanical Engineers
ASME	American Society of Mechanical Engineers
ANI	authorized nuclear inspector
CAR	corrective action report
CFR	<i>Code of Federal Regulations</i>

DOI	department operating instruction
DSR	document status report
IP	inspection procedure
M&TE	measuring and test equipment
MPR	computerized manufacturing
MRS	manufacturing route sheet
NIAC	Nuclear Industry Assessment Committee
NMR	nonconformance report
NRC	U.S. Nuclear Regulatory Commission
PO	purchase order
RG	regulatory guide
QA	quality assurance
QAI	quality assurance instruction
QCI	quality control inspector
QCM	quality control manager
SQR	supplier quality requirement
SRV	safety relief valve